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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,592	08/05/2003	Ralf Birkelbach	000137.00026	4811

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EXAMINER

SHARP, JEFFREY ANDREW

ART UNIT	PAPER NUMBER
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3677

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/633,592	BIRKELBACH ET AL.	
	Examiner	Art Unit	
	Jeffrey Sharp	3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

- [1] Claims 1-14 are pending.

Claim Rejections - 35 USC § 102

- [2] The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- [3] Claims 1, 3, and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Carlson et al. US-3,794,092. (Refer to Figure 9).

Carlson et al. teach a substantially cylindrical rear area, and tapered frontal area, having reversed oblique thread bisectors that angle away from the head in the rear area, and angle toward the head in the frontal area. The threads have asymmetrical threads with respect to the longitudinal axis. The front and rear areas act as means for thread forming and locking, respectively, in the same way as disclosed by Applicant on Page 3 lines 4-7 of the instant specification (see Carlson et al. Col 13 lines 13-40). Further, Carlson et al. anticipate any type of thread structure that would accomplish the same task (Carlson et al. Col 4 lines 3-6 and lines 12-14).

As for claim 3, Carlson et al. Figure 9 shows a reversal point at the transition point between front (tapered) and rear (substantially cylindrical) areas.

Claim Rejections - 35 USC § 103

[4] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[5] Claims 2, 6, and 8-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above in view of Birkelback DE 19960287.

Carlson et al. teach all of the limitations of the instant claim 1; however fail to disclose expressly, an 82-degree bisector angle, 45-degree flank angle, or 70-degree flank angle.

Birkelback teaches an improved thread profile comprising an 82-degree bisector angle, 45-degree flank angle, or 70-degree flank angle.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the front and rear areas taught by Carlson et al., to comprise the 82-degree bisector angle, 45-degree flank angle, and/or 70-degree flank angle taught by Birkelback, in order to achieve the improved holding and locking function and associated advantages suggested by Birkelback's thread profile.

As supporting evidence that the threads of Birkelback can be reversed as taught by Carlson et al., Roberts et al. US-6,185,896 teaches the inverted thread profile for the same insertion and thread-forming purpose (See Roberts et al. Figures 6 and 7).

As for claim 6, Carlson et al. suggests a mirrored thread profile (in Figure 9).

As for claim 8, Carlson et al. in view of Birkelback suggests two areas of threads having inverted bisectors, substantially having 1) a rear area with a rectilinear load flank and bent rear flank, and 2) a front area with a rectilinear rear flank and bent load flank as described.

As for claim 9, 20%-15% of the thread height has not been shown to be significantly different than "approximately 1/3". As such, it would have been an obvious matter of design choice and apparent to those of ordinary skill, to raise or lower the bend location near or around "approximately 1/3". Applicant has not shown that 20%-15% yields any significant advantage or solves any particular problem stated by the prior art. Further, at the time of invention, Birkelback would have been expected by those of ordinary skill to function similarly using a reinforcement bend having a lower profile within the broad range of "approximately 1/3". It is apparent to those of ordinary skill that a low profile design modification may save material and allow more thread engagement, but does not significantly depart from the scope of the function of serving to reinforce and distribute thread loads.

As for claim 10, see Birkelback claim 4 line 4. The limitations set forth in claim 1 allow for a bent thread flank of "approximately 70 degrees".

As for claim 11, Birkelback anticipates 45-degree flanks in claim 4. Carlson et al. anticipate any known threads for both the front and rear areas (which are shown to be reversed). At the time of invention, one of ordinary skill could use the threads taught by Birkelback as suggested by Carlson et al. to gain the advantages of Birkelback's thread design, while still providing the reversed 'pushing' function of the front area and 'locking' function of the rear area as taught by Carlson et al.

[6] Claims 12-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above, in view of McKewan US-4,258,607.

Carlson et al. teach all of the limitations of the instant claim 1; however fail to disclose expressly, a larger flank angle at the front area than the rear area, and a 90-degree circumferential flat along the threads at the reversal point.

McKewan teaches a larger flank angle at the front area (9) than the rear area (1). McKewan also teaches a 90-degree circumferential flat along the threads at the reversal point. At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the threads near the reversal point taught by Carlson et al., to

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comprise the 90-degree circumferential flat taught by McKewan, in order to provide an escape for the self-tapped material as commonly done in the prior art. It would have further been obvious to provide larger flank angles in the front tapping area than the rear holding/locking area, in order to create a thread having a clearance (i.e., wedge ramp) for the rear threads to move against, thus providing a means for resisting loosening due to vibration and the like (McKewan Col 1 lines 8-17).

[7] Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above, in view of Neuhengen US Pat Pub-2002/0094255.

Carlson et al. teach all of the limitations of the instant claim 1; however fail to disclose expressly, both load and rear flank angles to run rectilinearly.

Neuhengen teaches both load and rear flank angles that are asymmetrical and run rectilinearly (Pg 2 Paragraph 0016 lines 5-8). Neuhengen further teaches that prior art screws are known to have angled bends (pertinent to claim 8 subject matter).

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the load and rear flanks of Carlson et al., to run rectilinearly as suggested by Neuhengen, in order to enable the screw to successfully tap into plastic without cracking it, and to gain the advantages of the asymmetrical thread profile taught by Neuhengen.

[8] Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above, in view of Thevenin FR-1,483,932

Carlson et al. teach all of the limitations of the instant claim 1; however fail to disclose expressly, a reversal point in front of the transition point between substantially cylindrical rear area and tapered front area.

Thevenin teaches a reversal point of threads in front of the transition between front and rear areas.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the location of the reversal point taught by Carlson et al., to be in front of the transition point as suggested by Thevenin, in order to strategically vary the holding power in the front area, and improve the front tapping area so that it serves

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to both 1) push/deform the panel forward, *and* 2) resist removal with the holding power of the rear-type threads near the head.

[9] Claims 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. US-3,794,092 as discussed above, in view of Pottgieber DE 198 31 269 A1.

Carlson et al. teach all of the limitations of the instant claim 1; however fail to disclose expressly, a reversal point behind the transition point between substantially cylindrical rear area and tapered front area.

Pottgieber teaches a reversal point of threads behind the transition between front and rear areas.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the location of the reversal point taught by Carlson et al., to be in the rear area behind the transition point as suggested by Pottgieber, in order to strategically vary the holding power in the rear area to suit the application and thickness of panel material.

Conclusion

[10] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

US-6,722,833 Birkelback shows an improvement in thread design.

US-3,878,759 Carlson teaches front forming and rear holding areas, a taper, and flats for tapping.

US-5,304,024 Schuster teaches asymmetrical threads with bisector towards the head in both front and rear areas, and flats for tapping.

US-4,179,976 Sygnator teaches a flat separating tapered front and substantially cylindrical rear areas

US-635,297 Caldwell teaches 'pushing effect' from a conical front portion having asymmetrical threads with bisectors angled towards the head in Figure 7, and 'holding effect' from downward threads in Figure 6.

US-3,129,963 teaches frontal tapered portion having similar asymmetrical threads with bisectors angled toward the head. The thread angle is approximately 70-degrees as discussed in the instant claim 10.

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US-6,338,600 Friederich et al. teach an identical head and rear thread structure, having a tapered thread-forming region (18).

US-6,158,939 Grossberndt et al. show similar thread features including a bend (19) similar to Carlson et al. and Applicant, and show a front portion having asymmetrical threads with bisectors angled toward the head (Figure 12).

US-3,537,288 Ansingh shows a self-tapping screw having a tapered front area and rear area.

US-3,504,722 Breed shows a tapered front area and rear area having flats for tapping.

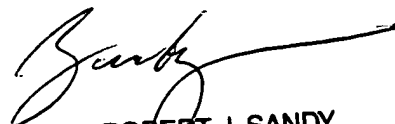
US-4,351,626 Holmes shows similar rear area threads.

[11] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (703) 305-2693. The examiner can normally be reached on 7:30 am - 5:00 pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (703) 306-4115. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAS


ROBERT J. SANDY
PRIMARY EXAMINER